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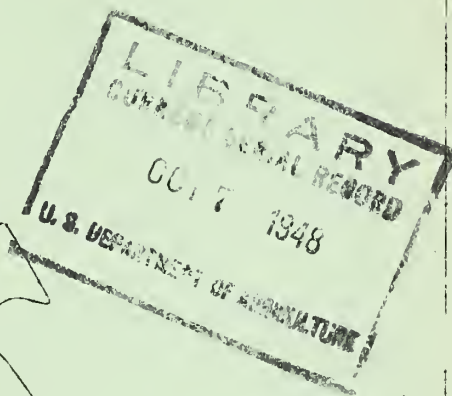
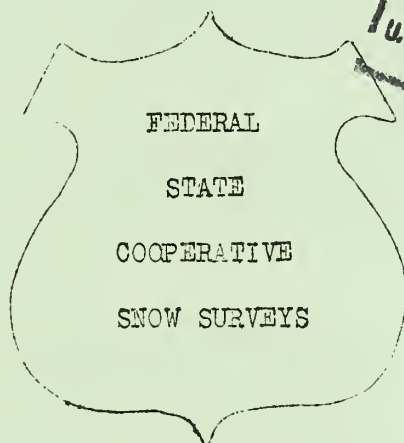
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SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for the

COLORADO RIVER DRAINAGE BASIN

February 1, 1948



Issued by

Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Colorado Agricultural Experiment Station

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Data included in this report were obtained by the agencies named above in cooperation with the U.S. Forest Service, National Park Service, State Engineers of Colorado and New Mexico, and other Federal, State and Local Agencies.

WATER SUPPLY OUTLOOK
COLORADO RIVER DRAINAGE

February 1, 1948

The prospects for normal summer runoff in the Colorado River and its tributaries in Colorado are now favorable. Snow accumulation west of the Continental Divide is slightly better than a year ago and is 10 percent above average for the whole watershed. For the Colorado, Yampa and White Rivers the snow water content is relatively high, while on the Gunnison, Dolores and San Juan it is near the past 13-year average. Precipitation during the past month has been above normal in northern Colorado ranging to a definite deficiency in the south and into New Mexico. Soil moisture conditions are described as excellent except in extreme southwestern Colorado. Reservoir storage is substantially above February 1, 1947.

Drought conditions continued in western New Mexico and Arizona. Precipitation in irrigated areas has been light and reservoir storage is lower than a year ago.

COLORADO RIVER AND
TRIBUTARIES IN COLORADO

Colorado River. The snow cover on the headwaters of the Colorado above Grand Junction is 12 percent above normal and slightly more than a year ago. On areas near the Continental Divide the snow is much heavier than last year. This is balanced by snow on Grand Mesa and at Independence Pass which is somewhat lower. At Trickle Divide the snow water content is 15 inches as compared to 21 inches on February 1, 1947. Precipitation has been slightly above normal and the valley area is snow covered. Soil moisture and crop conditions are described as good. The flow of the Colorado is unusually high and was reported at 130 percent of normal near Grand Junction.

Gunnison River. The water supply prospects on the Gunnison River, this coming season, are not quite as favorable as a year ago but the average snow cover is just under the past 13-year normal. The snow water content is relatively heavier near the Continental Divide. The prospects for summer runoff are improved due to snow covering all of the lower mountain elevations including the Uncompahgre valley. Other favorable factors include storage in Taylor Park Reservoir which now stands at 86 percent of capacity. Storage was 63 percent of capacity on February 1, 1947. Precipitation and stream flow has been above normal. Soil moisture is reported as excellent. In view of these conditions the flow of the Gunnison may well exceed last year.

Yampa and White Rivers. From limited snow surveys on these watersheds February 1, the outlook for water supplies originating in these streams is about the same as a year ago. The snow water content measured at Burro Mountain course is 10.3 inches as compared with 10.8 last year. Recent precipitation at valley elevations is reported to be normal or above. Soil moisture conditions are good. Stream flow is better than average for this time of year. Crop and range areas are snow covered.

San Juan River. On the watersheds of the San Juan and Animas Rivers and their tributaries snow accumulation is about average for this time of year. On the upper San Juan course near Wolf Creek Pass the snow water content is 18 inches as compared to 16.7 a year ago and 16.5 as normal. Other snow courses in this drainage in Colorado follow a similar pattern. Snow is negligible on the New Mexico tributaries. In contrast with other areas in Colorado recent precipitation has been deficient at lower elevations. Soil moisture conditions are good. Stream flow is normal or above. Reservoir storage is generally improved over a year ago. Vallecito Reservoir now contains 72,000 acre-feet as compared to 57,300 on February 1, 1947.

Dolores River. Snow cover on the Dolores River watershed is somewhat improved over a year ago at high elevations. At Lizard Head Pass the snow water content is 9.5 inches. Last year at this time it was 6.6. At medium and valley elevations snow cover and precipitation are sub-normal. Soil moisture is reported as fair to good. Stream flow is below average.

COLORADO RIVER TRIBUTARIES IN ARIZONA

The outlook for an adequate water supply for irrigated areas in Arizona continues to be poor. The drought period of the past two years is continued. At higher elevations on the watersheds of the Gila, Salt, Little Colorado and Williams Rivers the snow cover is less than a year ago and less than 50 percent of normal. Precipitation during the past month has been low in the valley areas but about normal at higher elevations. Soil moisture conditions follow the distribution of the precipitation. Range areas are reported in poor condition. Storage in major reservoirs is extremely low. In the Salt River valley reservoirs, there is now in storage 232,000 acre-feet in comparison with 425,000 a year ago. The past ten-year average is about 765,000 for these reservoirs. San Carlos Reservoir, on the Gila River, is reported as empty. The past ten-year average for the reservoir is 216,000 acre-feet.

Storage in Lake Mead, on February 1, was 19,866,000 acre-feet or two and one-quarter million acre-feet above last year.

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

COLORADO RIVER BASIN

STATUS OF RESERVOIR STORAGE, FEBRUARY 1, 1948

BASIN AND STREAM	RESERVOIR	USABLE CAPACITY (Thous.A.Ft.)	THOUSANDS ACRE FEET IN STORAGE About February 1				
			1948	1947	1946	1945	10-year Avg. 1937-46*
COLORADO DRAINAGE							
Taylor River	Taylor Park	106.2	90.9	66.5	82.5	55.6	57.6
Los Pinos River	Vallecito	126.3	72.0	57.3	38.6	7.8	32.9
Groundhog Creek	Groundhog	21.7	10.0	—	8.5	8.0	11.0
Blue River	Green Mountain	146.9		86.0	72.0	63.0	44.0
Colorado River	Lake Mead	27935.0	19866.0	17603.0**	19417.0**	19908.0**	20956.0**
Colorado River	Lake Havasu	683.0	593.3	602.0**	572.0**	577.0	506.0**
SALT AND GILA DRAINAGE							
Salt River	Roosevelt	1420.0	41.2	169.9	476.4	613.8	539.8
" "	Horse Mesa	245.0	150.4	208.1	223.3	219.4	181.0
" "	Mormon Flat	53.0	23.8	31.9	21.4	21.2	29.9
" "	Stewart Mt.	70.0	16.1	14.5	7.1	11.8	16.1
Verde River	Bartlett	200.0	3.7		7.8	11.1	47.2
Aqua Fria River	Carl Pleasant	173.0	0.8	2.9	3.4	3.9	16.7
Gila River	San Carlos	1200.0	0.0	17.0	26.1	105.7	215.7

*Some for shorter periods

*Some for shorter periods

**Net Storage, Jan. 15, 1948

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

COLORADO RIVER BASIN

February 1, 1948

SUMMARY OF FEBRUARY 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

WATERSHEDS	Snow Depth		Water Content		Number Courses in Average	Snow Density		1948 Water Content in percent of Thirteen year Avg.*	
	Thirteen year Avg.*	1947	1948	Thirteen year Avg.*		Thirteen year Avg.*	1947	1948	Thirteen year Avg.*
COLORADO RIVER	In.	In.	In.	In.		Percent	Percent	Percent	
Colorado River**	38.5	39.9	42.9	9.0	11	23	25	23	112
Yampa River	44.7	45.8	45.3	10.8	2	24	23	27	115
White River	42.3	47.1	39.7	10.3	1	24	23	26	100
Gunnison River	39.0	39.9	35.9	9.1	9	23	26	25	99
Dolores River	28.2	25.1	24.8	6.2	3	22	20	24	95
San Juan River	32.5	28.6	31.3	8.1	7	25	27	25	97
Gila River	8.2	5.2	5.5	2.1	6	26	27	25	67
Salt River	9.3	6.7	3.1	2.4	5	26	28	26	30

*Some for shorter periods.

**Above Grand Junction

P R E C I P I T A T I O N D A T A

WATERSHED	STATE	Precipitation*		Departure from Normal		Precipitation*	Departure from Normal
		Precipitation* October 1 to January 31	Inches	Precipitation* January Inches	Inches		
Colorado	Colorado		6.41		1.08		-0.50
Green	Wyoming		3.17		0.49		-0.14
San Juan	New Mexico						
Colorado	Arizona		4.47		0.23		-1.21
Gila	New Mexico						

The accumulated precipitation since October 1 over the watershed of the Colorado River was above normal except on the Colorado River drainage in Arizona. Precipitation was below normal over the entire drainage basin for January.

*Precipitation tentative

COLORADO RIVER SNOW SURVEYS, February 1, 1948

SNOW COVER MEASUREMENTS

LOCATION

DRAINAGE BASIN and SNOW COURSE	No. and State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (Inches)	Water Content (inches)			Years of Record	Past Record Av. Water Content (Inches)
								1948 In.	1947 In.	1946 In.		
COLORADO RIVER												
(Above Grand Junction)												
Cameron Pass*	1 Colo.	2	6N	76W	10300	1/31	51.4	13.5	14.2	12.4	10	11.3
Phantom Valley	12 "	7	5N	75W	9300	1/29	32.7	7.2	4.8	5.8	13	5.2
Berthoud Pass	16 "	35	2S	75W	9700	2/2	41.8	10.1	6.8	11.2	13	8.7
Tennessee Pass*	19 "	21	8S	80W	10200	2/2	29.0	4.6	5.2	7.2	13	4.6
Ind. Pass Tunnel	33 "	30	11S	82W	10200	1/30	45.4	9.6	11.5	11.5	13	9.5
Mesa Lakes	56 "	35	11S	96W	10000	2/2	37.6	10.0	10.0	5.7	12	9.0
Fremont Pass #2	79 "	2	8S	79W	11400	1/29	49.6	9.4	9.0	11.4	13	8.2
Trickle Divide	85 "	23	11S	94W	10000	1/30	54.6	15.0	21.1	10.0	9	15.4
Shrine Pass	96 "	15	6S	79W	10500	1/29	51.5	12.1	7.5	12.2	7	9.2
Grizzly Peak	97 "	2	5S	76W	11250	1/28	44.1	10.3	9.9	11.8	7	9.3
Ivanhoe	100 "	12	9S	82W	10400	1/31	34.6	2.0	8.1	6.9	3	8.0
					Average for drainage		42.9	10.1	9.8	9.7		9.0
YAMPA RIVER												
Columbine Lodge*	8 "	21	5N	82W	9300	1/31	54.5	15.8	10.9	16.2	13	12.9
Elk River	9 "	6	10N	85W	8700	2/2	36.2	8.9	10.1	10.1	10	8.7
					Average for drainage		45.3	13.4	10.5	13.2		10.8
WHITE RIVER												
Burro Mountain	35 Colo.	15	2S	91W	9000	2/2	39.7	10.3	10.8	10.2	13	10.3
GUNNISON RIVER												
Crested Butte	18 "	22	13S	86W	9000	2/2	27.5	5.7	6.1	7.1	13	7.0
Marshall Creek	42 "	24	48N	6E	10800	2/1	31.3	5.8	5.2	5.3	13	6.6
Poncha Creek*	43 "	19	48N	7E	10500	2/1	25.7	6.2	4.3	4.7	13	6.2
Park Cone	46 "	19	14S	82W	9700	2/2	26.2	5.4	4.9	4.6	13	4.6
Alexander Lake	53 "	2	12S	95W	10000	1/29	50.3	13.5	17.8	8.1	12	12.4
Ironton Park	58 "	29	43N	7W	9800	1/30	27.3	6.2	5.0	6.6	12	6.9
Trickle Divide	85 "	23	11S	94W	10000	1/30	54.6	15.0	21.1	11.7	9	15.4
Park Reservoir	87 "	34	11S	94W	9500	1/31	51.5	14.0	20.1	10.0	9	14.3
Porphyry Creek	89 "	19	40N	6E	10800	1/30	29.2	9.0	7.1	9.7	9	8.6
Kannah Creek	101 "	5	12S	95W	10700	2/2	52.8	15.8	14.1	7.5	2	15.0
					Average for Drainage		35.9	9.0	10.2			9.1

*On adjacent drainage

COLORADO RIVER SNOW SURVEYS, February 1, 1948

LOCATION

SNOW COURSE MEASUREMENTS

SNOW COURSE MEASUREMENTS												
DRAINAGE BASIN and SNOW COURSE	No. and State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (Inches)	Water Content (Inches)			Past Record Years of Record	Av. Water Content (Inches)
								1948	1947	1946		
COLORADO RIVER												
DOLORES RIVER	23 Colo.	11	39N	11W	8700	2/2	16.1	In.	In.	In.	9	5.4
	24 "	6	42N	8W	8600	1/31	25.0	4.2	4.2	4.5	10	4.6
	25 "	24	41N	10W	10300	2/2	33.4	3.9	6.6	6.8	10	8.6
	Average for Drainage						24.8	9.5	4.9	5.0		6.2
SAN JUAN RIVER	26 Colo.	4	37N	2E	10000	1/30	52.0	14.0	16.1	5.8	9	14.3
	29 "	10	37N	1E	10000	1/30	62.7	18.0	16.7	7.7	9	16.5
	30 "	10	41N	7W	9400	1/30	18.9	3.0	4.3	3.1	10	3.6
	31 "	12	39N	9W	8850	1/31	32.4	7.5	6.8	3.8	10	6.5
	93 "	24	37N	6W	7950	2/1	17.7	5.0	1.5	2.8	7	5.8
	17 N.Mex.		36.9N	106.7W	7750	2/1	11.5	2.7	2.8	1.9	9	4.1
	18 "		36.9N	106.7W	8500	2/1	23.7	4.5	6.5	3.3	7	5.9
	Average for Drainage						31.3	7.8	7.8	4.1		8.1
GILA RIVER	11 N.Mex.	21	6S	20W	8000	2/1	8.9	2.1	1.1	1.4	11	2.2
	14 "	6	6S	21W	8000	2/1	7.1	1.5	1.8	1.5	11	2.8
	22 "	20	10S	10W	7850	2/1	2.9	0.9	1.1	1.7	7	0.9
	23 "	6	11S	10W	7800	2/1	2.7	1.0	0.6	2.1	3	1.2
	3 Ariz.	23	6N	30E	8500	2/1	5.2	1.0	1.6	1.7	11	2.2
	4 "	13	4N	30E	8000			1.0	1.6	1.6	11	
	5 "	26	5N	30E	8000	2/1	6.2	1.7	2.2	1.4	11	3.4
Average for Drainage						5.5	1.4	1.4	1.6		2.1	
SALT RIVER	6 Ariz.	14	8N	23E	7200	2/1	2.4	0.8	3.2	3.6	10	3.3
	7 "	2	9N	21E	6000	2/1	1.5	0.5	1.1	1.7	8	1.4
	9 "	28	8N	23E	7000	2/1	T	T	1.4	1.4	8	1.9
	3 "	23	6N	30E	8500	2/1	5.2	1.0	1.6	1.7	11	2.2
	5 "	26	5N	30E	8000	2/1	6.2	1.7	2.2	1.4	11	3.4
	Average for drainage						3.1	0.8	1.9	2.0		2.4

*On adjacent drainage

COLORADO RIVER SNOW SURVEYS, February 1, 1948

DRAINAGE BASIN and SNOW COURSE	LOCATION			SNOW COURSE MEASUREMENTS									
	No. and State	Sec.	Twp.	Range	Elev.	Date of Survey(Inches)	Snow Depth (Inches)	Water Content (Inches)			Years of Record	Past Record Av. Water Content (Inches)	
COLORADO RIVER													
VERDE RIVER													
Iron Springs*	11 Ariz.	22	14N	3W	6200	1/29	0	0	0	0	3	0	0
Camp Wood	12 "	3	16N	6W	5700	2/1	0	0	0	0	3	0	0
Mingus Mountain	"	3	15N	2E	7100	2/1	0	0	0	---	2	0	0
Mormon Lake*	"	13	18N	8E	7350	2/1	13.1	3.8	3.4	---	2	3.6	3.6
Fort Valley*	"	22	22N	6E	7350	1/30	2.2	0.3	1.0	---	2	0.6	0.6
Chalender*	"	27	22N	3E	7100	2/1	9.2	2.6	1.4	---	2	2.0	2.0
					Average for Drainage		4.1	1.1	1.0	---		1.0	1.0
LITTLE COLORADO RIVER													
Forest Dale*	7 Ariz.	2	9N	21E	6000	2/1	1.5	0.5	1.1	2.1	8	1.4	1.4
McNary	6 "	14	8N	23E	7200	2/1	2.4	0.8	3.2	4.6	10	3.3	3.3
Nutrioso*	3 "	23	6N	30E	6500	2/1	5.2	1.0	1.6	1.7	11	2.2	2.2
Mormon Lake	"	13	18N	8E	7350	2/1	13.1	3.8	3.4	---	2	3.6	3.6
Fort Valley	"	22	22N	6E	7350	1/30	2.2	0.3	1.0	---	2	0.6	0.6
Bright Angel	Ariz.	34	33N	3E	8400	2/1	17.9	5.0	---	---	1	---	---
Grand Canyon	Ariz.	21	30N	4E	75.0	2/1	3.3	0.9	---	---	1	---	---
					Average for Drainage		4.9	1.3	2.1	---		2.2	2.2
WILLIAMS RIVER													
Iron Springs	11 Ariz.	22	14N	3W	6200	1/29	0	0	0	0	3	0	0
Camp Wood*	12 "	3	16N	6W	5700	2/1	0	0	0	0	3	0	0
Willow Ranch	"	16	21N	11W	5000		0	0	---	---	2	0	0
					Average for Drainage		0	0	---	---		0	0

*On adjacent drainage

The following organizations cooperate in the snow surveys and irrigation water supply forecasts for the Colorado, Missouri-Arkansas and Rio Grande watersheds by furnishing funds or services.

STATE

Colorado State Engineer
Wyoming State Engineer
Utah State Engineer
New Mexico State Engineer
Montana State Engineer
Nebraska State Engineer
Colorado Experiment Station
Colorado Extension Service
Montana Experiment Station
Utah Experiment Station

FEDERAL

Department of Agriculture
Forest Service
Soil Conservation Service
Department of Interior
Bureau of Reclamation
Geological Survey
National Park Service
Department of Commerce
Weather Bureau
War Department
Army Engineer Corps

PUBLIC UTILITIES

Colorado Public Service Company
Western Colorado Power Company
Montana Power Company
Public Service Company of New Mexico
Denver and Rio Grande Western R. R. Company

MUNICIPALITIES

City of Bozeman
City of Denver
City of Boulder

WATER USERS ORGANIZATIONS

Poudre Valley Water Users' Association
Arkansas Valley Ditch Association
Colorado River Water Conservation District

IRRIGATION PROJECTS

Farmers Reservoir and Irrigation Company
San Luis Valley Irrigation District
Santa Maria Reservoir Company
Costilla Land Company
Uncompahgre Valley Water Users' Association
Wyoming Development Company
Goshen Irrigation District
Kendrick Project
Pathfinder Irrigation District
Salt River Valley Water Users' Association
San Carlos Irrigation and Drainage District
Twin Lakes Reservoir and Canal Company

Many other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

